Soil Conservation

September 1977

U.S. Department of Agriculture

Texas Tales of Conservation 4

Scouting Out Our Soil's Future 11

A Place for Waste 15

From the Administrator

Exporting Conservation

Technical aid may be our most valuable export to the less developed countries. Since the Foreign Assistance Act was passed in 1961, the Soil Conservation Service has sent 340 of its best people to 46 different nations to help increase crop production and protect and improve soil and water resources.

Of the 340 SCS'ers, 120 accepted resident assignments of a year or more and 220 went on short-term assignments ranging from a week to 6 months.

Today our foreign assignments continue, and we expect their numbers to increase in the near future. In making both short-term and resident assignments, we look for the best qualified people we can find. Foreign assignments are part of the career development program of the Service. We are apt to fill them with people in their middle years who understand that meeting the challenge of an overseas assignment can prepare an employee for a more responsible job at home.

It has been said, only partly in jest, that the ideal SCS candidate for a foreign assignment is a vigorous 35-year-old with 50 years of conservation experience.

SCS people who go to other countries report that they learn as many lessons as the people they help. One SCS veteran of a Latin American assignment recalled the shock of being plunged into a totally new environment, one where farmers still relied on the ax and machete instead of the tractor and combine.

He said that he found he had moved "from a place where I knew where to find most of the answers to a place where the answers had to be improvised." He also discovered that he was wrestling with resource problems that couldn't be solved by the addition of more capital and machinery. Answers had to be geared to local customs and the limits of the economy. This is valuable training for any American.

SCS also is acting as host for many foreign visitors. Since 1962, our agency has provided training for some 5,800 foreign participants from 100 countries. The trainees see for themselves whether the practices we recommend work or not and take back the information to their own people. In this way, we also are exporting American expertise in conservation.

Mel Davis

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Cover:
Texas grain sorghum farmers leave a cover of stubble during harvest to protect the land against wind erosion. (See pages 4 through 10.)

Soil Conservation

Contents

From the Administrator 2

Texas Tales of Conservation 4
George C. Marks

Conservation Is Your Future 11
Thomas W. Levermann

Keeping Dairy Waste Under Control 15
Anne Schuhart

Playground Minus Gullies 21
Ray Donaldson

Terraces Do the Job 22
Gale Chambers

Meetings 23

Like a scene from a Hollywood western, three generations of Texas ranch family ride across their property, improved under Great Plains Conservation Program.

The head of the SCS program in the Lone Star State tells how a staff of 1,600 helps everybody from a citrus farmer with 15 acres to a cattle rancher with some 200,000 acres.

by George C. Marks

Texas Tales of Conservation

It's hard, if not impossible, to talk about soil conservation in Texas without talking in terms of bigness. We've got a lot of soil to conserve.

As the late Speaker of the House Sam Rayburn said after a former territory on the Arctic Circle was admitted to statehood, "Texas is still our largest unfrozen State."

But even a Texan has to admit that bigness is not necessarily an advantage in managing a conservation program. Sheer distances can wear you out. It is 601 miles from the SCS State office at Temple, in central Texas, to El Paso in the west. It is 523 miles to Dalhart, in the Panhandle. Our area office in Amarillo is closer to four other State offices than it is to ours (Stillwater, Okla.; Denver, Colo.; Albuquerque, N. Mex.; and Salina, Kans.).

The SCS district conservationist in El Paso, J. W. McDonald, once got a wire from his brother in Chicago: "Please go to Texarkana. Help Aunt Sarah settle uncle's estate." J. W. wired back: "Go yourself. You are closer."

Few people on the State office staff have ever been to all 25 area offices in Texas. I know of only one staffer who has been to all 257 field offices. The State is so big that we've had to divide it into three administrative sections to manage it—central, north, and south.

We like our employees to move around in Texas to broaden their experience. Seldom do we promote a person to a job in the same area in which he has been working. But sometimes it's like moving him to another planet.

Not long ago, for example, G. L. Westmoreland was district conser-

The Great Plains Conservation Program has spurred us to develop the technology needed to plan and install new conservation systems that were unheard of 20 years ago.

Attracting tourists and homefolks is the San Antonio River flowing through downtown San Antonio. It is fed from the Edwards Underground Reservoir, which also furnishes water for the city. Farm and ranch conservation slow runoff and help put more water into the reservoir.

Brush removed in strips, with cleared areas seeded to grass, improves rangeland while leaving adequate cover for deer, quail, wild turkey, and javelina. Pattern brush control was developed in Texas.

Drought still plagues the Texas Plains periodically. Walter Bertsch, SCS district conservationist at Seminole, examines the dry soils of Gaines County. Residue left on fields slows erosion.

vationist at Beaumont, serving a rice farming area along the Gulf Coast. Then we moved him 680 miles to Panhandle, a small town in northwest Texas. Rainfall dropped from 55 inches at Beaumont to 22 inches on the Plains. The average annual growing season dropped from 297 days to 197. And there are a few other differences that G. L. could tell you about!

For one thing, the weather up there is what Texans call "variable." Natives tell about the settler driving his team of oxen across the Panhandle. It was autumn, but still so hot that one ox was overcome and died. While the settler was skinning it, a blue norther blew in and froze the other ox to death.

Texas is also big in the number and quality of the people who work on soil conservation. Our State gets nearly 10 percent of all SCS funds and has nearly 10 percent of all SCS employees. Our work force now numbers about 1,600 full-time, intermittent, and part-time employees, plus some 50 student trainees.

SCS, of course, is only part of the Lone Star conservation team. There are 197 soil and water conservation districts governed by 985 directors. The Texas State Soil and Water Conservation Board, also in Temple, includes 20 employees besides Executive Director Harvey Davis. Its annual budget is about $1.2 million.

The rest of the conservation team—and the most important part—is made up of the 186,000 farmers and ranchers in Texas. The majority of them

While parts of Texas were suffering from dust storms last spring, other parts were battling floodwaters. To help reduce flooding, we have built some 1,800 floodwater retarding dams, sediment control structures, and grade stabilization structures.

Texas isn't all cattle, cowboys, and oil wells. A terraced field of oats awaits combining in the Red River Valley.

are soil conservation district cooperators.

The size of their operations ranges all over the map. In the Lower Rio Grande Valley, at Mission, SCS District Conservationist Norman Bade works with 3,000 farmers with an average of only 15 acres per farm. (They are interested mostly in more efficient irrigation methods, land leveling, and conservation cropping systems.)

A short drive north of the valley is the 1 million-acre King Ranch, which sprawls over two counties. Texas has some 50 ranches of more than 200,000 acres, including the 6666 Ranch at Guthrie. The "Four Sixes" supposedly got its name in the late 1800's to commemorate the draw poker hand that the new owner was holding when he won the ranch. (Common conservation practices on rangeland include brush management, planned grazing systems, range seeding, livestock water development, and ponds.)

SCS has defined 20 land resource regions in the 48 contiguous States. Each is sharply different from the others in land use, topography, climate, water, and soil. Most States have only one or two such regions; Florida has three. There are six regions, however, located in whole or in part in Texas. There also are 705 recognized soil series in the State. It's enough to drive a soil scientist nuts!

Crazy or not, scientists have completed soil surveys on 77 percent of the State. Of the 25 Standard Metropolitan Statistical Areas in this supposedly rural State, all have been mapped with a very few exceptions.

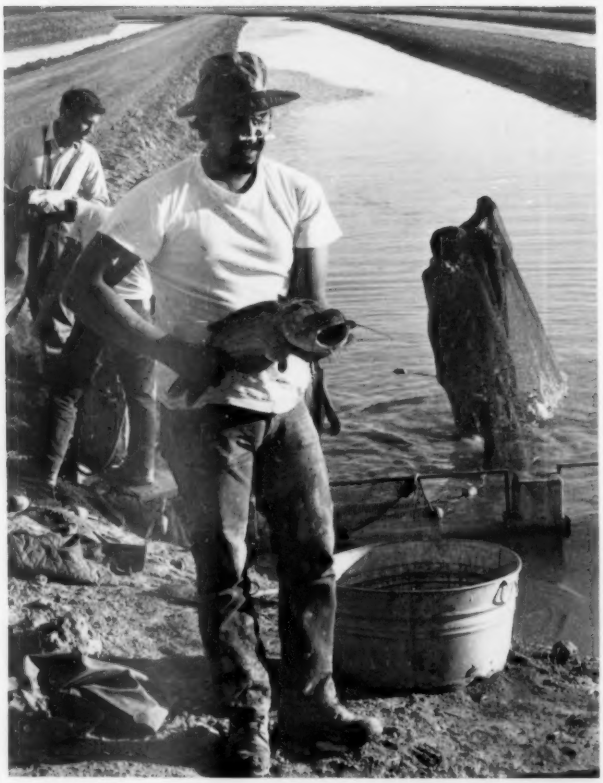
As you might expect, we've pioneered several conservation practices in Texas. One is pattern brush control, in which the rancher clears strips of brush and plants them to grass, leaving alternating strips in woody plants for wildlife cover. Done properly, the practice can improve habitat for most wildlife species.

We also developed short duration grazing, in which livestock from several pastures are grouped into a single herd and placed in one pasture. After a few weeks, they are rotated to another pasture. The first pasture is rested to allow the better grasses to gain in vigor, produce seed, and thicken the stand; and so on, through a number of pastures. The system is complicated and takes careful management, but some 400 Texas livestock producers are now using short duration grazing with good results.

We also install a lot of terraces and grassed waterways. Lately we've been

Texas is big in the number and quality of the people who work on soil conservation. But SCS is only part of the Lone Star conservation team. There are 197 soil and water conservation districts governed by 985 directors.

Ten-pound channel catfish is moved from one raceway to another at the Big River Catfish Farms, in Maverick County. SCS technicians helped with design and layout of raceways.



Near Mission, land is leveled between rows of citrus trees for better irrigation water management. This is a common practice in subtropical Lower Rio Grande Valley.

Texas is still the Nation's number one cattle State, with no other State even threatening to steal that position. Herefords were described by field photographer as "high-class cattle on high-class range."

We emphasize operations management down here, partly because we want to give sound advice and service, and partly because that's the kind of service that Texans demand.

building about 4,300 miles of terraces per year. That's enough to reach from Texas to Alaska—and back. Our records show that some 274,000 miles of terraces are "on the land" in Texas. That's enough to reach to the moon, with 35,000 miles left over.

This is not to say that we have built all the terraces we need, because we haven't. Our last conservation needs inventory showed that some 5.3 million acres of cropland needed terracing.

We also have more work to do in the Southern High Plains. Wind erosion this year damaged more than 2 million acres in west Texas. A lot of the damage occurred on March 11, when winds gusting up to 100 miles per hour raked the dry-as-dust soils. Even irrigated wheat blew out of the ground near the Texas-Oklahoma border. And while I can't vouch for it personally, a farmer said he saw a hen backed into the wind lay the same egg four times.

The storms brought back grim memories of the 1933 Dust Bowl, when Texas children wore gauze masks to prevent "dust pneumonia" and a

Nearly half the terraces built in Texas today are parallel, like these seven in Gonzales County. They are easier to farm with modern equipment than old-style terraces.

A rancher in Pedernales County waters his horse (and dog) at a concrete watering tank built to take advantage of a spring seep in the limestone hills.

Panhandle editor couldn't see across Main Street for 27 days out of 31.

But conditions this year were not nearly as bad as in the dirty thirties, thanks to the work of districts, SCS, and conservation farmers. Over the years, they have learned how to tie down the Plains soils with minimum tillage, stubble mulching, and other practices. Not everyone uses them yet, but the number increases each year.

The Great Plains Conservation Program also has helped. Texas has 123 counties in the program and farmers and ranchers have signed more than 15,000 contracts on 19.2 million acres. The program also has spurred us to develop the technology needed to plan and install new conservation systems that were unheard of 20 years ago. These include minimum tillage, parallel terraces, certain types of critical area treatment, and short duration grazing systems.

We also have new conservation and forage plants; some of them are selected and released by the plant materials center at Knox City, Tex. The most successful Texas selection so far is a warm season grass from South Africa, Selection 75 kleingrass. This grass is excellent forage; it gets green early and stays green late, and it tolerates drought and moderate salinity. Texans have planted a lot of it since SCS released it.

While parts of Texas were suffering from dust storms last spring, other parts of the State were battling floodwaters. To help reduce flooding, we have built some 1,800 floodwater retarding dams, sediment control structures, and grade stabilization structures. The work has been done through all three watershed protection programs: authorized watersheds, the pilot watershed program, and Public Law 566.

And there is still more to do, as recent flood victims can testify.

The size of our State doesn't mean that Texans aren't also concerned with the smaller things in life. Many of our citizens are worried, for example, about preserving the rare golden-cheeked warbler. This songbird builds its nests only from the loose bark it strips from mature juniper trees found in the Texas Hill Country. The birds migrate there from Mexico every spring.

The trouble is, large acreages of virgin juniper have been cut for fenceposts and aromatic oils. The destruction of the warbler's habitat has gradually reduced its numbers, but now our citizens are determined to reverse the situation. One rancher near San Antonio has cleared his land of the small junipers of no benefit to the warblers, and kept the bigger trees as well as associated oaks that

We've pioneered several conservation practices in Texas. One is pattern brush control; another is short duration grazing. We also install a lot of terraces and grassed waterways.

Riceland along Texas Gulf is leveled under water. Sediment suspended in the water settles out evenly.

furnish cover for the birds. His personal wildlife preservation program has been carried out on several hundred acres, all for the specific benefit of the golden-cheeked warbler.

It takes all kinds to make a well-rounded conservation program, and we have them all in Texas. Texans have character . . . and they *are* characters. And they take their independence and individuality—and conservation—seriously. We put a lot of emphasis on operations management down here, partly because we want to give sound advice and service, and partly because that's the kind of service that Texans demand.

For that reason, Texas is good training ground for soil conservationists. If Virginia is the Mother of Presidents, then Texas is the Mother of State Conservationists. Besides me, seven of the present SCS State heads worked and learned here. We also have several alumni in the Washington office, including an assistant administrator.

Nearly 500 Texas Aggies (graduates of Texas A&M University) work for SCS, including me. Their numbers include the Aggie range conservationist who stopped by the butcher shop the other day to buy a dozen karate chops.

With employees like that, we know Texas is in good hands.

Mr. Marks is State conservationist, SCS, Temple, Tex.

Over the years, farmers and ranchers have learned how to tie down the soil with minimum tillage, stubble mulching, and other practices. Not everyone uses them yet, but the number increases each year.

Miniature soil profiles were popular mementos of the Scout Jamboree. SCS District Conservationist Michael Sigrist from Salisbury, Md., explains the natural processes of soil development while the Scout uses materials representing bedrock, parent material, subsoil, and surface soil to create a soil profile in a plastic tube.

by Thomas W. Levermann

Conservation Is Your Future

Backyard conservation was one of many displays giving Boy Scouts an opportunity to learn about soil and water conservation at the 9th National Scout Jamboree.

A model backyard shows Scouts conservation techniques they can use at home, such as good ground cover to protect the soil. Water from an underground seep is drained into a small pond which provides water for birds and other wildlife. To prevent running water from eroding the soil at the drain outlet, the waterway is lined with rocks.

District Conservationist Byron Breisch of Butler, Pa., discusses plants that wildlife use for food and cover and that Scouts can plant in their own yards.

"Comparing the backyards and making a soil profile were two of the best experiences I've had all week," exclaimed an enthusiastic California Scout at the 9th National Scout Jamboree. Hands-on learning activities and demonstrations of conservation problems and solutions highlighted the 3-acre Soil Conservation Service instructional area.

"Conservation Is Your Future" was the theme for the SCS conservation program, a part of the Jamboree's 80-acre environmental conservation learning area. SCS was one of 24 State and Federal agencies and private conservation organizations that constructed special displays and conducted continuous conservation learning programs in the area.

Two model backyards constructed by SCS highlighted for Scouts and visitors the benefits of conservation of soil and water. The yards contrasted the effects of poor use of natural resources with an inviting homesite that had been improved through the use of simple and inexpensive conservation

Photos, Donald C. Schuhart

Butler County Conservation District Director Jean Breisch gives Scouts information about earning the soil and water conservation merit badge. Scouts who earn the badge after they return home and have it certified by a local conservation district official will receive a specially designed patch from Butler District.

Scouts study monoliths of six different Pennsylvania soils and photographs of good and poor uses of those soils. District Conservationist Ronald Phelps from Somerset, Pa., explains how to relate different soil characteristics to appropriate land uses.

techniques. In the "conservation" backyard, practices such as plantings to attract wildlife and add beauty, composting, and a waterway lined with rocks illustrated conservation projects Scouts could tackle at home. The other yard depicted the consequences of neglect: rills and gullies, soggy spots where grass would not grow, and effluent from a waste disposal system functioning improperly because of poor surface water management.

Other sections of the SCS "Conservation Is Your Future" area gave Scouts opportunities to learn how and why erosion occurs and what can be done to control it; the relation of soil characteristics to good land use; how soil is formed; how surface-mined land is reclaimed; and something about significant soil-water-plant-animal relationships. Each demonstration at the instruction stations offered ideas that Scouts could adapt for environmental improvement projects in their home communities.

SCS also created a one-third scale model conservation camping area showing how to protect natural resources on troop campsites from overuse. The on-the-ground exhibit explained a simple method of rotating campsites over a 3-year period based on the characteristics and capabilities of the soil.

More than 28,000 Scouts and leaders from the 50 States and 22 foreign countries attended the Jamboree, which was held at Moraine State Park in Butler County, Pa., about 50 miles north of Pittsburgh.

Scouts also visited the Jamboree

In the SCS learning area at the Jamboree, RC&D Coordinator David Hinson from Canfield, Ohio, describes a mural showing various events occurring in the area of Moraine State Park during the last 15,000 years. Some of the scenes depict the advance of the last glacier and the process of soil formation, the effects of coal mining on the environment, and how Pennsylvanians have reclaimed the mined land for a park.

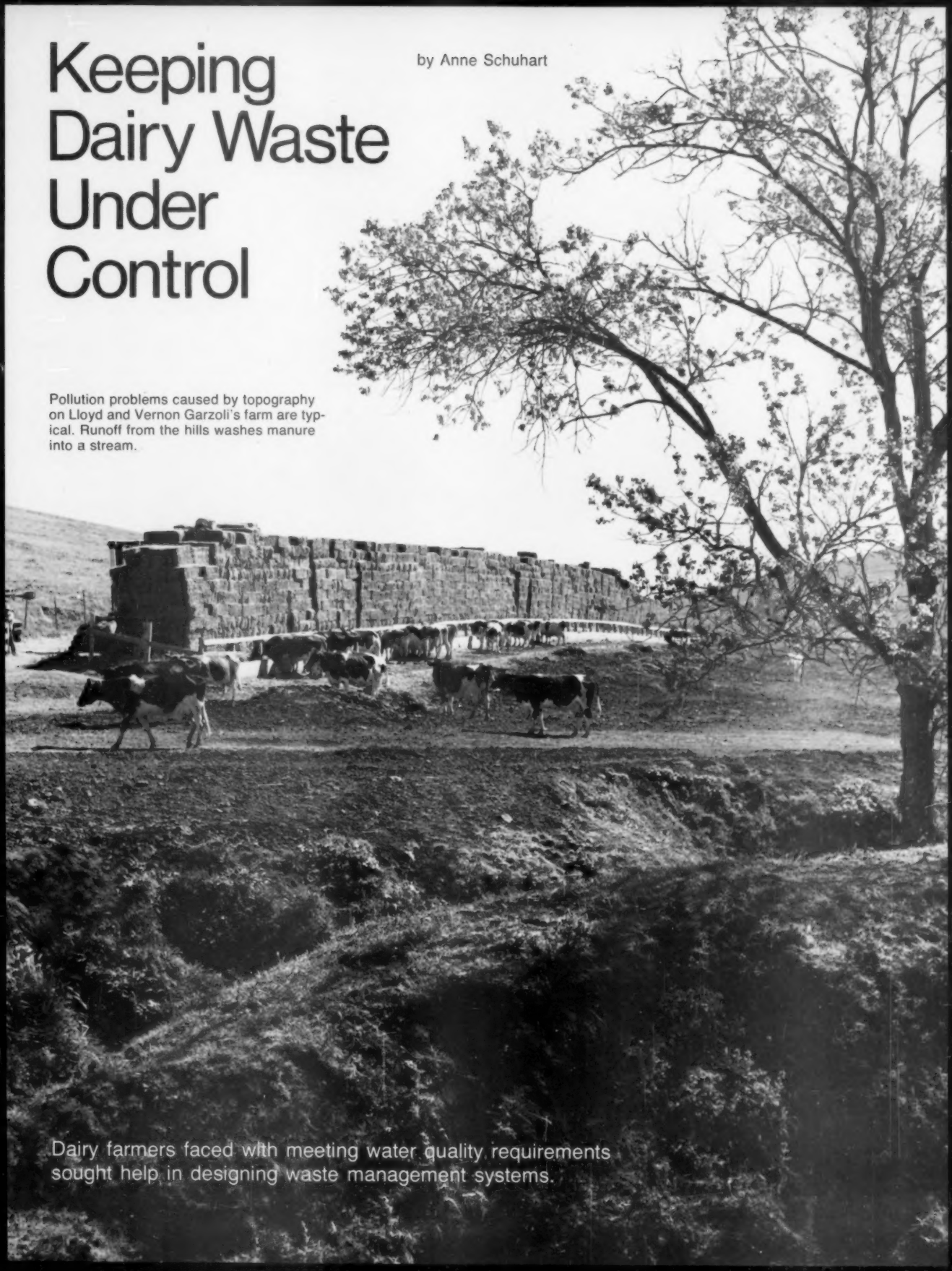
District Conservationist Timothy Emenheiser from Hollidaysburg, Pa., helps Scouts demonstrate the effect of falling water on bare soil and soil protected by grass or mulch. Scouts see that a vegetative cover reduces soil erosion and improves water quality.

Merit Badge Midway where the Butler County Conservation District made a significant contribution in encouraging Scouts to learn about soil and water conservation. There, district directors and employees instructed Scouts on how to earn the Scout soil and water conservation merit badge. After a Scout earns the merit badge and a district official in the home community certifies that it was earned, the Butler district will send the Scout a special conservation patch. The National Association of Conservation Districts shared the cost of special leaflets about conservation districts that were given to each Scout.

Mr. Levermann is an educational relations specialist, Information Division, SCS, Washington, D.C.

Keeping Dairy Waste Under Control

by Anne Schuhart



Pollution problems caused by topography on Lloyd and Vernon Garzoli's farm are typical. Runoff from the hills washes manure into a stream.

Dairy farmers faced with meeting water quality requirements sought help in designing waste management systems.

On the McClelland's dairy farm, waste passes through three settling ponds. At right, when the first is full, the liquid overflows into a second pond then into a third (below). Because of the drought, the third settling pond has not had enough water to make the flushing system fully operational.

Robert McClelland and his son, George (right), discuss their waste disposal system with Kenneth Wingett (left), SCS soil conservation technician. Liquid waste is recycled to flush barns or irrigate and fertilize corn grown for silage. Solids are spread on fields.

Lloyd Garzoli (left) and his brother, Vernon, use tractor power to pump slurry to fields through a pipeline and sprinkler system. A sprinkler sprays slurry onto the Garzoli's pastures to irrigate and fertilize the grass.

Californians are working together to keep animal waste from polluting San Francisco Bay, Tomalas Bay, and the Pacific Ocean.

Since the late 1960's, California has had one of the strongest water quality control programs in the Nation. A State board along with regional boards established water quality standards, adopt and enforce waste discharge orders, and administer the Federal Water Pollution Control Act Amendments of 1972.

In an area north of San Francisco, two counties and five resource conservation districts are coordinating their work with two regional water quality control boards in an effort to clean up the water.

Much of the work of regional water quality boards involves municipal and industrial wastes. But in Marin and Sonoma Counties, where dairying is a major agricultural enterprise, the San Francisco Bay Area and North Coast Regional Boards ran into another problem: Animal waste and washwater from dairies was contributing to the pollution of local municipal water supplies and several Tomalas Bay oyster farms.

The regional boards set tight deadlines for meeting water quality requirements: September 1976 for dairies draining into Tomalas Bay and September 1978 for other dairies in the Bay Area and North Coast Regions. However, many dairy farmers could not afford waste management systems to meet the requirements. Some systems could cost as much as $300,000—or $450 per cow—including freestall loafing barns.

Dairy waste committees, under direction of the Farm Bureau and working closely with the Cooperative Extension Service Farm Advisors for Marin and Sonoma Counties, requested special help in meeting the requirements from the Soil Conservation Service and the five resource conservation districts in the counties. Through the Intergovernmental Personnel Act (IPA), Marin County in 1973 hired an SCS agricultural engineer to design waste disposal systems for dairies and help farmers plan management of the systems. The next year, Sonoma County hired an SCS engineer and a technician through IPA agreements to help dairy farmers.

Marin County further decided to pay 25 percent of the cost of the systems in five equal annual installments.

"In Marin County, across the Golden Gate Bridge from San Francisco, many of the residents are strong environmentalists, and their attitude has helped. The county decided to help farmers financially partly because dairies provide open space in the rapidly urbanizing area," explained Rixon Rafter, the SCS engineer assigned to the county from 1973 to 1976. Rafter now is assigned to Sonoma County, and Marin County has hired a private consulting engineer to complete the work begun under the IPA Agreement.

The regional water quality boards oversee the program, and the districts and SCS continue to work with the farmers on management after the systems are installed.

"Designing and managing self-contained systems is tough here because many of the dairies are on hillsides along creeks that flow into urban areas," Rafter said.

The problems caused by topography on Lloyd and Vernon Garzoli's farm southwest of Petaluma are typical. The dairy has been in the Garzoli family for 90 years. As on many old farms, the feeding, loafing, and milking areas are on steep hills sloping down to a small creek. Each rainfall washed manure into the stream.

The Garzoli brothers began recycling animal waste on their own about 6 years ago. In Sonoma County, they were among the first to pump liquid waste through a pipeline and sprinkler system onto pastures.

"We had no guidelines for recycling waste," said Vernon Garzoli, "so we just went ahead with what we thought would work."

Their new plan of operations, drawn up by Rafter in April, incorporates the Garzolis' ideas. Animal waste, washwater, and runoff—"slurry"—still will be transported and spread onto pastures by the pipeline and sprinkler system or by truck. Waste from an open feeding area will be scraped up and also spread on pastures. The plan details how much waste can be applied to the land without danger of pollution.

The Garzoli brothers now are excavating a large holding pond to store waste and runoff from a feeding area, loafing sheds, and a corral. They also

On Arthur LaFranchi's farm, dried manure is spread on pastures or used as bedding in the freestall barn.

are building a network of diversions and culverts to conduct clean runoff from the hillsides and rooftops around and under manured areas and into the stream.

Robert McClelland and his son, George, installed a different type of waste disposal system for their dairy west of Petaluma. Waste is flushed from the feeding and freestall barns into a concrete holding tank and pumped from the tank into a settling pond. When that pond is full, the liquid is allowed to overflow into a second settling pond and then into a third. When it has passed through all three ponds and the solids have settled out, the liquid is piped into a storage pond. It is recycled to flush the barns or to irrigate and fertilize corn grown for silage.

The plan specifies that solids will be removed from the settling ponds once a year and spread on fields. Open corrals will be scraped before winter rains, and the solids also will be spread on fields. To avoid polluting runoff, the corrals will not be used in winter.

Arthur LaFranchi's dairy had severe pollution problems because the drainage flowed through the nearby city of Petaluma. Last November, he moved his 650-cow milking herd into new quarters on another ranch northwest of Santa Rosa. A self-contained waste management system was designed into the operation from the beginning.

The new dairy has no open corrals; milk cows are housed in freestall loafing barns instead. Freestall loafing barns are replacing open corrals in the dairy industry because they increase milk production by protecting the cattle during heavy rains or hot weather. The barns help control pollution because the roof keeps rain from falling on the manured area and washing waste into waterways.

Like the McClellands, LaFranchi flushes waste from his concrete barn floors. LaFranchi, however, then uses a drag chain type separator to remove the solids from the manure-water mixture.

The solids are stacked, dried, and used as bedding in the freestall barn or spread on pastures. The liquid is collected in a holding pond and used to irrigate cultivated fields of winter oats and summer corn grown for silage.

Bob Fistolera, LaFranchi's head herdsman, said, "This flushing system is much easier. We used to scrape up the manure while it was still wet. It was miserable for the animals and miserable for the people who had to do it."

Nevertheless, flushing systems have drawbacks as well, and this year's lack of water is one of the dairymen's biggest problems.

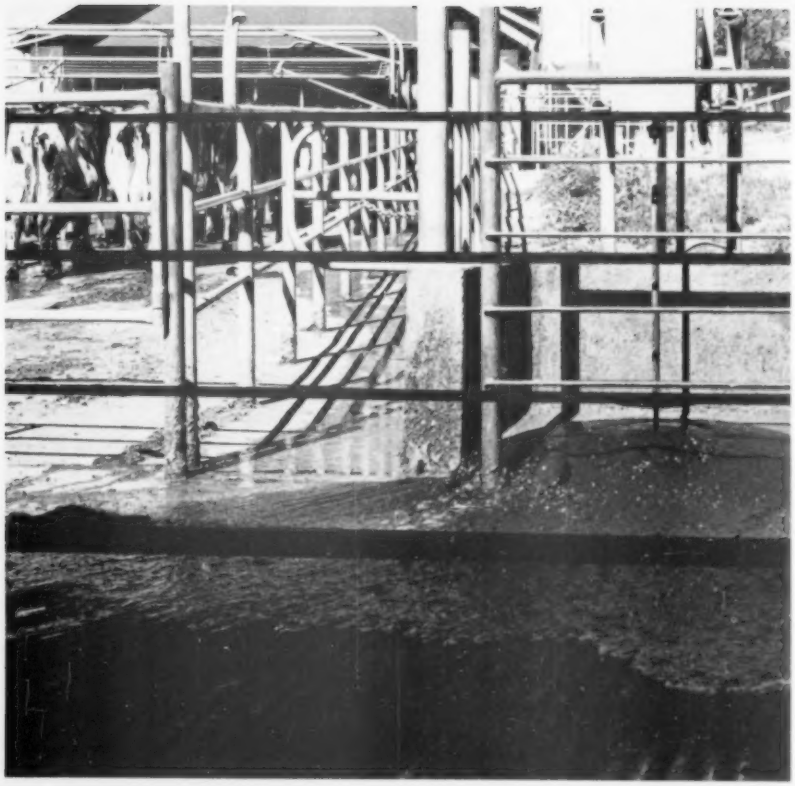
"If we had stayed in Petaluma, we'd have been out of business because of the drought," Fistolera explained. "It hasn't hurt us much here because we use effluent from Santa Rosa's municipal disposal plant for irrigating pastures and we have three wells for fresh water and flushing."

The drought is slowing Robert and George McClelland, however. Although they completed construction on their waste disposal system this spring, they are running short of water to make it work. It takes nearly 100,000 gallons of water a day to flush the four concrete alleys in the loafing barn.

The drought also is hurting dairymen throughout the area financially. Milk cows, which usually graze in spring and early summer, had to be put back on feed in April or May. Young and dry stock, which usually graze year round, also must be fed now. Many stockwater ponds and wells are drying up, and many farmers in both Marin and Sonoma Counties are hauling water for their animals and for sanitation. Partly because of the drought, some dairies in the area have been forced out of business altogether.

In spite of the lack of water and increased expenses, however, more than 80 percent of the dairies in Marin County and 90 percent of the dairies in Sonoma County have completed waste disposal systems or are working toward compliance with the water quality standards. Pollution from dairies soon will be stopped by the cooperative effort.

Ms. Schuhart is a writer-editor, Information Division, SCS, Washington, D.C.



In LaFranchi's system, water released at one end of the freestall barn (top) flushes waste into a pit at the other end (bottom).

A drag chain separator removes solid waste from the liquid in the pit. The liquid is collected in a holding pond and used to irrigate fields.

by Ray Donaldson

Through community cooperation, a rural Alabama town rescued a schoolyard that had severe erosion problems.

Playground Minus Gullies

"Grass on the schoolyard at Butler Elementary? It'll never grow there," said local skeptics when conservation planning began at the school last year.

A preliminary survey of the school site in rural Choctaw County, Ala., was not encouraging. About a fourth of the playground was severely gullied and the usable part had only about a 10 percent grass cover.

Because the school is surrounded by a residential area, there is no room to extend playgrounds. Intensive use by more than 850 students over the years had aggravated erosion problems that were caused partly by the 8-degree slope of the land. Several portable and temporary classrooms further crowded the area.

Sediment from the schoolyard washed into a small stream nearby, reducing its water capacity. Consequently, the stream flooded with almost every rainstorm, sometimes causing wet basements in a few nearby homes.

The Butler Parent-Teacher Association (PTA) Special Projects Committee asked for help from the Soil Conservation Service through the Choctaw County Soil and Water Conservation District. Working through the district, SCS prepared a conservation plan for the site.

Mirian Heaton, principal of the school, backed the conservation plan. Many of the teachers used the planning stages of the project as an opportunity to help students understand conservation practices and how people can improve their environment.

Cost estimates included in the plan far exceeded funds available from the PTA, but Heaton was determined to have the playground improved before the next school year.

Community cooperation was the answer. Support from county officials, businessmen, and parents eventually solved most of the money problems.

County Commissioner J. K. Sparrow sent a bulldozer and roadscraper from his road crew to smooth off the gullied areas, thus saving several thousand dollars. The city of Butler supplied a backhoe and operator for excavation.

Probate Judge-elect Charles Ford donated his time and equipment for disking and preparing the seedbed for grass. A local merchant donated 50 pounds of Pensacola bahiagrass seed and sold bermudagrass seed to the PTA at a reduced price.

Another county commissioner, Grady Mosely, hauled topsoil to cover 3 acres, replacing the soil that had washed into the stream. Parents and students helped mulch the 3 acres by hand.

A third county commissioner, Julian Johnson, helped with a concrete flume and box outlet designed by SCS to carry off stormwater. He built the forms and supervised the pouring of concrete, saving the community much expense. The plan also included about 1,000 feet of diversion terraces.

The surface water disposal system was barely in place when it was severely tested. A rainstorm dropped 2.5 inches of rain within an hour and a half. The system worked; only minor damage was done to one diversion. The system carried water safely off the schoolyard and not a single basement was flooded.

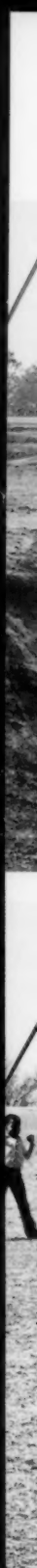
As the grass began to grow, the skeptics took another look.

Seeding on the rest of the schoolyard was put off until summer vacation. In the fall, students will begin revegetating small plots around the main playground. Later, they will establish study sites in the schoolyard.

Butler school is a shining example to other schools in Choctaw County. Two more schools have already asked SCS to help them solve their schoolyard problems.

The Butler project proved that local effort can do the job—no Federal or State funds were used. The cost estimate for shaping and planting the school site was $10,000. Thanks to community cooperation, it cost less than $4,000.

Mr. Donaldson is district conservationist, SCS, Ozark, Ala.



Butler Elementary School Principal Mirian Heaton inspects a good stand of grass where there was only a 10 percent cover.

Gullies on the playground at Butler school were unsightly and dangerous. Through a community effort, the eroding areas were smoothed, shaped, and seeded.

Terraces Do the Job

An agricultural magazine editor tells how a young Idaho farmer evaluates soil and water conservation practices.

by Gale Chambers

In Idaho, farmers use diversion terraces along with other conservation practices to stop erosion.

There are times when a severe storm can boil the silt out of the cropped farms and foothills in and around Rockland, a dryland wheat growing region in Power County, Idaho. In the past, soil losses have been estimated at 20 tons per acre annually. Soil conservation Service specialists have estimated the loss in the entire Rock Creek watershed area at nearly 2 million tons with some 550,000 tons reaching the Snake River. The rest of the silt is deposited on the bottomlands along Rock Creek.

It's good soil, and good soil can erode.

Not every farmer in that basin is content to watch the soil wash down the creek; some of them are fighting to keep it on the land.

Stanford Taysom, a young dryland wheat farmer, looks at farming as a stewardship role rather than an owner role.

"I believe we have an obligation to the land," says Taysom, as he struggles to keep the soil attached to his deed.

There are a lot of good soil conservation practices that farmers can use in their battle with erosion. Taysom's stock in trade is his ability to mesh a good practice with farming practicality. He not only believes in establishing a good terrace system; he works to find a manageable way to put it in. He serves as his own contractor and builds his own terraces.

It's one thing to put in a terrace storybook-style; it's another to be able to farm over those terraces once they are in. "It's definitely a give and take operation," said Jim Stalnaker, SCS district conservationist. The important thing, according to Stalnaker, is that terraces are being constructed and being dovetailed into other conservation practices.

According to Taysom, fitting conservation practices into a farm management scheme isn't hard to do. One has to know which practice is time consuming and which is timesaving. An eroding gully may eventually cost the farmer time because he has to maneuver his equipment around it. Gully plugs and terraces can save time. However, the establishment of terraces on a field with no eroding gully may cost the farmer time because he'll

have to farm over and around the terrace.

Taysom timed his work effort on a field that was not eroding badly. It took him 10½ hours to work the field. Then he put in terraces and reworked the same field. He found that it took him 15 minutes longer to cover the same area of ground. The extra 15 minutes isn't too much to keep erosion on the field under control.

A common complaint of terraces is that they rob the grower of potential yield because of disturbed soil. "You may lose some yield on the upper end of the slope, but you'll pick it up below the terrace due to seepage and moisture through the terraces. This additional moisture will boost yield in that spot—so it'll balance out," Taysom said.

By learning how to build his own terraces, the farmer-operator can reduce his costs. Taysom estimates that he can build his own terraces for 65 cents per linear foot, if conditions are right. So far he has installed some 38,000 linear feet of basin terraces.

"Terraces alone won't do the job," says Taysom. "They must be combined with other practices." He uses gully plugs, deep chiseling, and limited tillage to work in harmony with the terraces. "The terrace system does make an operator farm on the contour," he says. "That in itself is a conservation practice."

Slopes in Rockland Valley vary from 5 to 15 percent. Newer, more powerful equipment makes it easier for farmers to work the steeper slopes.

One of the most important things Taysom does is log his time and effort concerning terrace construction. He wants to determine how long his terraces will last; whether cost sharing is important; whether terraces are worth farming over; if they are worth the time and effort in the long run; and what the long and short range benefits are. All of these questions are going into Taysom's log book along with other information he may add concerning cost and benefits.

Mr. Chambers is editor, *Idaho Farmer-Stockman*, Boise, Idaho.

Meetings:

October	
2–6	Congress for Recreation and Parks, Las Vegas, Nev
2–6	National Association of County Agricultural Agents, Hartford, Conn.
2–7	Water Pollution Control Federation Conference, Philadelphia, Pa.
8–12	American Institute of Planners Conference, Kansas City, Mo.
14–20	National Environmental Sanitation and Maintenance Educational Conference, Exposition, Lake Buena Vista, Fla.
15–19	American Bankers Association, Houston, Tex.
16–19	American Forestry Association, Monterey, Calif.
20–23	National Association of Biology Teachers, Inc., Anaheim, Calif.
25–29	American Horticultural Society Conference, Pasadena, Calif.
27–28	American Association for Vocational Instructional Material, Fargo, N. Dak.
29–Nov. 2	Adult Continuing Education National Conference, Detroit, Mich.
31–Nov. 2	American Association of State Highway and Transportation Officials, Atlantic City, N.J.
November	
6–9	Irrigation Association Convention, New Orleans, La.
7–9	Geological Society of America, Seattle, Wash.
8–11	Future Farmers of America, Kansas City, Mo.
13–16	National Forest Products Association, San Diego, Calif.
13–17	American Institute of Chemical Engineers, New York, N.Y.
13–18	American Society of Agronomy, Los Angeles, Calif.
13–18	Soil Science Society of America, Los Angeles, Calif.
14–22	The National Grange, Greensboro, N.C.
15–16	Purdue Air Quality Conference and Exhibition, Indianapolis, Ind.
22–26	National Council for Geographic Education, St. Louis, Mo.
29–Dec. 1	Western Forestry and Conservation Association Conference, Seattle, Wash.
30–Dec. 2	Keep America Beautiful, Inc., National Meeting, New York, N.Y.
December	
4–6	American Society of Farm Managers and Rural Appraisers, Inc., Denver, Colo.
5–9	American Geophysical Union, San Francisco, Calif.
12–13	Erosion and Sedimentation Symposium, Chicago, Ill.
13–16	American Society of Agricultural Engineers, Chicago, Ill.

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